DETAILED ACTION

Response to Amendment

This communication is in response to the amendment filed 11/21/2011. The amendment has been entered and considered.

- Claims 78-105 are pending

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 78, 79, 84-97, 100, and 102-104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng US 5,963,557 in view of Grzeczkowski US 2003/0143946.

Regarding claim 78, Eng teaches a method of scalable multifunctional network communication between presentation devices and service providers (point-to-point and multicast communication within a network between a plurality of devices such as subscriber stations which include set top boxes (Abstract and Column 1 Lines 6-16, Column 2 Lines 56-58, see also Figure 7), comprising:

receiving at a head end control computer, via an uplink channel, upstream messages from one or more consumer premise equipment (CPE) units and sending

from the head end control computer, via a downlink channel downstream messages to the one or more of the CPE units (Figure 7 shows a headend (112) receiving communications from a subscriber station via an upstream channel (f2 and f3) and the headend sends, via a downstream channel (f1) messages to the subscriber stations (150).;

receiving transmission time interval requests via the uplink channel at the head end control computer from one or more of the CPE units or from the service providers (each channel is divided into slots and each upstream channel carries information from the stations (150) to the central controller. Reservation requests for time slots are sent via the upstream channel to the headend control; Column 8 Lines 33-65 and Figure 7);

collecting received requests for transmission time intervals on the uplink channel in a database and arranging at least some requests from the database in a request queue update message at the head end control computer and sending the request queue update message via the downlink channel to at least some of the CPE units (the stations write reservation requests which are sent in the upstream control channel and received (i.e. collected) by the central controller. The central controller then writes control bit-streams in the downstream channel and sends that information to the respective stations which requested the various reservation slots; Column 8 Lines 49-65. The reservation request information is stored in the request register (292); see Figure 14 (which is a representation of the components of a headend controller) and Column 17 Lines 4-8).

Eng does not explicitly disclose updating a master queue in the head end control computer. However, Grzeczkowski teaches users which interact with a head end control unit and a cable plant to obtain various services; Paragraphs 3 and 5. Further yet, a centralized database (i.e. master queue) of information is located at the headend and is updated on a regular basis to keep up with rapidly changing information; Paragraph 54. Thus, Grzeczkowski effectively teaches the idea of updating a centralized database at various points in time as claimed.

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include updating a database as taught by Grzeczkowski.

One would be motivated to make the modification such that the database is kept up-to-date with constantly changing information.

Regarding claim 79, Eng teaches the uplink and downlink messages include service messages and control messages (control messages request messages and payload packets are transmitted in the upstream and downstream channels which are used for setting up the connection and allocating resources to be used; Column 4 Lines 17-23 and Column 13 Lines 39-60).

Regarding claim 84, Eng teaches using TDMA (Column 3 Lines 15-16).

Regarding claim 85, Eng teaches modulating, transmitting, acquiring, tracking, and demodulating signals on the uplink and downlink (Figures 10A and 14 show a headend and subscriber station which transmit/receive messages between the two. Further, the units include a modulator, transmitter, receiver, MAC controller, and demodulator for the uplink and downlink channels).

Regarding claim 86, Eng teaches the use of system clocks (subscriber MAC includes a transmit scheduler which utilizes a uniform system time clock maintained at the headend. A synchronizer is used to maintain a system clock to ensure all station system clocks are synchronized; Column 14 Lines 6-22 and Column 17 Lines 23-26).

Regarding claim 87, Eng teaches locking the uplink to the downlink for clock synchronization (Figure 10A illustrates an upstream synchronizer with the upstream connected (i.e. locked) to the downstream; Column 17 Lines 23-26).

Regarding claim 88, Eng teaches acquiring and tracking boundaries on the downlink (transmit scheduler makes decisions using time slot identifier which were received via the downlink channel from the headend; Column 14 Lines 32-42).

Regarding claim 89, Eng teaches the messages are carried in intervals and some include a header (Figures 9 shows reservation request messages in slots (i.e.

intervals). Further, each slot includes a preamble (i.e. header); Column 11 Lines 50-51 see also Column 13 Line 57 which discusses each packet includes header information).

Regarding claim 90, Eng teaches organizing and transmitting control messages (writing and transmitting control streams that indicate time slots (organized); Column 8 Lines 49-58. Figure 9 further illustrates the control messages being organized into a bit stream).

Regarding claim 91, Eng teaches using message transmit queues and receive queues in the headend (circuitry enables the headend and subscriber station to transmit and receive messages between the two; Column 6 Lines 17-19. Further, the headend includes a transmit data buffer; Column 17 Lines 19-20. Lastly, Figure 14 shows a reservation request register (i.e. receive queue) (292) which stores incoming reservation requests received from the subscriber stations).

Regarding claim 92, Eng teaches using a request queue at the headend (Figure 14 shows a reservation request register (i.e. request queue) (292) which stores incoming reservation requests received from the subscriber stations).

Regarding claim 93, Eng teaches monitoring the downlink, inputting messages, and maintain the downlink synchronization (headend monitors each slot to determine if collisions have occurred; Column 5 Lines 6-12. Further, packets are input into the time

slots in a way to ensure synchronization of the channels/packets and modulate the packet data; Column 16 Lines 6-18).

Regarding claim 94, Eng teaches demodulating and decoding messages (Figure 14 shows the headend circuitry which includes a demodulate decoder which is applied to upstream packet payloads; Column 16 Lines 63-67).

Regarding claim 95, Eng teaches using a receive router at the headed for monitoring the received messages and routing them in accordance with requests (the headend examines the destination address of the packet header and transmits the packet to the downstream channel for reception by the subscriber stations; Column 4 Lines 8-15).

Regarding claim 96, Eng teaches using schedulers to for affecting transmission of messages (headend includes channel synchronizers (i.e. schedulers) and further schedulers packets for transmission by writing control packets which are transmitted to the subscriber station to determine the time slots in which packets are to be transmitted; Column 4 Lines 50-55).

Regarding claim 97, Eng teaches regulating the length and frequency of the transmitted messages (the length of slots needed for data transmission is determined

and a range of frequencies is assigned for the transmitted data; Column 14 Lines 28-32 and Column 10 Lines 62-67).

Regarding claim 100, Eng teaches determining an order of upstream messages for transmission based on characteristics of the message (transmission of data is determined based on the assigned number of granted slots and start slot indication; Column 16 Lines 13-18).

Regarding claim 102, Eng teaches a headend unit for a scalable multifunctional network communication between presentation devices and service providers (point-to-point and multicast communication within a network between a plurality of devices such as subscriber stations which include set top boxes (Abstract and Column 1 Lines 6-16, Column 2 Lines 56-58, see also Figure 7), comprising:

A receiver to receive upstream messages from one or more consumer premise equipment (CPE) units and a transmitter for sending downstream messages to the one or more of the CPE units (Figure 7 shows a headend (112) receiving communications from a subscriber station via an upstream channel (f2 and f3) and the headend sends, via a downstream channel (f1) messages to the subscriber stations (150).;

receiving transmission time interval requests via the uplink channel from one or more of the CPE units or from the service providers and storing them in a database (each channel is divided into slots and each upstream channel carries information from the stations (150) to the central controller. Reservation requests for time slots are sent

via the upstream channel to the headend control; Column 8 Lines 33-65 and Figure 7. The stations write reservation requests which are sent in the upstream control channel and received (i.e. collected) by the central controller. The central controller then writes control bit-streams in the downstream channel and sends that information to the respective stations which requested the various reservation slots; Column 8 Lines 49-65. The reservation request information is stored in the request register (292); see Figure 14 (which is a representation of the components of a headend controller) and Column 17 Lines 4-8).

Eng does not explicitly disclose updating a master queue in the head end control computer. However, Grzeczkowski teaches users which interact with a head end control unit and a cable plant to obtain various services; Paragraphs 3 and 5. Further yet, a centralized database (i.e. master queue) of information is located at the headend and is updated on a regular basis to keep up with rapidly changing information; Paragraph 54. Thus, Grzeczkowski effectively teaches the idea of updating a centralized database at various points in time as claimed.

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include updating a database as taught by Grzeczkowski.

One would be motivated to make the modification such that the database is kept up-to-date with constantly changing information.

Regarding claim 103, Eng teaches the uplink and downlink messages include service messages and control messages (control messages request messages and payload packets are transmitted in the upstream and downstream channels which are used for setting up the connection and allocating resources to be used; Column 4 Lines 17-23 and Column 13 Lines 39-60).

Regarding claim 104, Eng does not teach the headend is coupled to a group of service interface modules. However, Grzeczkowski teaches set-top boxes, are capable of video/audio communication services, which are coupled to peripheral equipment; Paragraphs 2 and 41).

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include coupling the headend to the service modules as claimed.

One would be motivated to make the modification to properly send/receive audio/video communications as taught by Grzeczkowski; Paragraph 2.

Claims 80-83, 98 and 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng in view of Grzeczkowski and further in view of Heath US 5,625,628.

Regarding claim 80, Eng teaches receiving messages requests from a CPE (Figure 7 shows a headend (112) receiving communications from a subscriber station

via an upstream channel (f2 and f3) and the headend sends, via a downstream channel (f1) messages to the subscriber stations (150)). Eng and Grzeczkowski do not disclose an Aloha slot burst interval being scheduled by the headend. However, Heath teaches a system executive performing task scheduling and control. Heath further teaches an Aloha processor which has the ability to select a burst within the number of bursts allocated; Column 4 Lines 23-35. Thus, the Aloha burst intervals are scheduled for transmission as claimed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include scheduling Aloha burst intervals.

One would be motivated to make the modification such that Aloha bursts can be successfully transmitted error free and in sequence as taught by Heath; Column 4 Lines 29-35.

Regarding claim 81, Eng teaches receiving at the headend messages requests from the CPE and arranging them in an update message and sending it downstream to the one or more CPE units (headend receives the reservation requests and writes a control packet and sends the packet to the subscriber stations via the downstream channel; Column 4 Lines 50-55).

Regarding claim 82, Eng teaches receiving service and control messages from the CPE units at the headend in response to the time slots of the request queue (subscriber stations receive the control packet from the headend which was created in

response to the reservation request messages; Column 4 Lines 50-55. The subscriber stations then transmits the packets in the assigned timeslot; Column 4 Lines 55-62. Further, the transmission scheduler of the subscriber stations schedules a transmission of the payload packets from the queue in response to the received control packet; Column 16 Lines 6-9).

Regarding claim 83, Eng teaches receiving service messages from the CPE and in turn distributing them to the service provider control subsystems (the headend receives messages from the subscriber stations and broadcasts (i.e. distributes) these messages to each subscriber station and MAC controller; Column 4 Lines 2-15 see also Figure 14 for upstream data being distributed to the media access controller).

Regarding claim 98, Eng teaches collecting requests in pools and forming the request queue update message (Figure 7 shows a headend (112) receiving communications from a subscriber station via an upstream channel (f2 and f3) and the headend sends, via a downstream channel (f1) messages to the subscriber stations (150). Further the headend monitors messages and sends feedback to the subscriber stations; Column 5 Lines 7-23). Thus it can be seen that the plurality of requests (i.e. pools) are collected before the update messages created as claimed).

Regarding claim 99, Eng teaches receiving update messages and placing the messages in a request queue under control of an algorithm (Figure 13 shows

scheduling a transmission of data in response to the feedback status. Further, a pending queue which contains data to be transmitted is checked to determine if data need to be transmitted Column 14 Lines 25-27. Lastly, feedback is obtained retransmission messages responses are formed by using an updating algorithm parameter; Column 15 Lines 29-41).

Claims 101 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng in view of Grzeczkowski and further in view Dorenbosch et al. "Dorenbosch" US 6,023,230.

Regarding claim 101, Eng and Grzeczkowski do not teach generating interval requests for Aloha intervals by means of an Aloha algorithm. However, Dorenbosch teaches a controller which schedules messages notifying the time slots to receive and acknowledge messages using an Aloha contention algorithm; Column 6 Lines 12-25).

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include an Aloha algorithm for generating interval requests.

One would be motivated to make the modification to provide a wide area coverage using multiple different frequencies.

Regarding claim 105, the prior art does not teach scheduling a burst interval. However, Dorenbosch teaches a controller which schedules messages notifying the

time slots to receive and acknowledge messages using an Aloha contention algorithm for bursts; Column 6 Lines 12-25).

Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Eng to include an scheduling for burst intervals algorithm for generating interval requests.

One would be motivated to make the modification to provide a wide area coverage using multiple different frequencies.

Response to Arguments

Applicant's arguments filed 11/21/2011 have been fully considered but they are not persuasive.

Regarding the independent claims, Applicant argues the prior art does not teach or suggest sending the request queue update message to one or more of the CPEs. The request queue update message including the request for transmission intervals received from the CPEs.

The Examiner respectfully disagrees. The Examiner relied upon the teachings of Eng to disclose receiving requests for various time intervals on the uplink channel and putting them in a queue in the headend control computer. More specifically Eng teaches reservation requests are written and sent in the upstream direction (i.e. uplink) and received (i.e. collected) by the central controller. This information is stored in a reservation request register (292) i.e. request queue of headend control computer

shown in Figure 14) see also Column 17 Lines 4-8). In other words, Eng discloses receiving/collecting the time interval request messages in a memory of the headend as claimed.

Lastly, Eng discloses in, Column 8 lines 49-65, that the requests are received by the central controller and the central controller responds by assigning specific slots which indicate which of the received slots the requesting party can utilize. In other words, Eng discloses the headend sends the request information as well as assignment information to the requesting device as claimed. The upstream channels are used to carry control bitstreams such as reservation requests for channel assignment and the downstream carries bitstream which include acknowledgement information and indication of time slots; Column 8 Lines 36-45. Thus it can be seen that the time interval request is within the reservation request for channel assignment and this information is used to form the response which assigns timeslots to the CPE.

The reservation request messages include various parameters such as the subscriber stations address; Column 14 Lines 55-57. Further, when the headend responds to the reservation request, the headend assigns resources to the requesting subscriber station. The slot assignment packet includes information such as the identifier/address of the requesting SS, and other information; Column 18 Lines 36-49. Thus, one can see that the reservation request/control bit allocation as directed to by the Examiner includes the same information such as an identifier of the subscriber station. Therefore the collected information is also within the queue update message as claimed.

The claims stand properly rejected, however if details were added to the independent claims as per the interview conversation when Applicant explained how the messages were processed and various other details, the claims would be set apart from the art of record.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON RENNER whose telephone number is (571)270-3621. The examiner can normally be reached on Monday-Friday 8-430.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brandon Renner/
Art Unit 2461
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